NASA Scientific & Technical Information Program

User Services Plan

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User Services Group

USER SERVICES PLAN

EXECUTIVE SUMMARY

The purpose of the NASA Scientific and Technical Information (STI) Program User Services Plan is to provide guidelines for User Services staff on what activities should be undertaken to promote the STI Program and to identify resources and priorities to achieve User Services goals and objectives. A majority of the activities recommended in support of goals and objectives are already underway. This Plan is an attempt to structure those activities, develop new activities, and recommend priorities in a period of limited resources. It represents efforts of the User Services team to establish a clear vision and focus for current and future outreach efforts.

Two User Services goals have been developed within the parameters of the STI Program strategic goals:

GOAL 1
Ensure the delivery of quality products and services to meet the needs of the NASA STI Program user community.

GOAL 2
Increase visibility of and access to the NASA STI Program.

To give direction to these goals, four objectives have been formulated. They will contribute to meeting the desired results of delivering the right product at the right price at the right time to the right audience--a precept of Total Quality Management.

OBJECTIVE 1
Identify and recommend innovative products and services to meet users' needs.

OBJECTIVE 2
Facilitate strategic alliances and cooperative programs to enhance and expand products and services.

OBJECTIVE 3
Anticipate requests for improved or new products and services.

OBJECTIVE 4
Promote the STI Program as an integral part of the NASA research and development (R&D) community.

To achieve the goals and objectives of the Plan, activities have been identified to accomplish each objective. Many of the activities are already underway, but at various levels of effort. Under each objective, activities are listed in priority order; an asterisk indicates an activity is underway; and an activity in bold and with number in parentheses indicate it is listed under another objective.

1. Identify and recommend innovative products and services to meet users' needs.
   *1.1. Define users and assess their STI requirements.
   *1.2. Build directory of NASA STI products, services, resources and capabilities.
   ***1.3. Expand communications to and from users.** (3.1)
   *1.4. Develop equitable pricing plans for products and services.
   1.5. Establish house standards for products and promotional materials.
   1.6. Establish internal New Product development and testing function. (3.6)
   1.7. Identify and evaluate external information resources. (2.5)
   *1.8. Identify new technologies relevant to STI.

2. Facilitate strategic alliances and cooperative programs to enhance and expand products and services.
   ***2.1. Identify and participate in information management policy and working groups/committees.** [e.g., CENDI, NFAIS] (4.3)
   *2.2. Foster STI Program staff participation in professional associations.
   ***2.3. Exhibit at expositions, meetings, conferences.** (4.5)
   2.4. Identify and evaluate external information sources. (1.7)

3. Anticipate requests for improved or new products and services.
   ***3.1. Expand communication to and from users.** (1.3)
   3.2. Promote the use of communications technology.
   ***3.3. Establish user groups.** (4.4)
   *3.4. Create a User Services database.
   *3.5. Review and expand user training.
   3.6. Establish internal New Product development and testing function. (3.6)

4. Promote the STI Program as an integral part of the NASA R&D community.
   *4.1. Develop an outreach plan for NASA Program Offices.
   4.2. Identify key players in emerging NASA policy issues; track and provide input.
   ***4.3. Identify and participate in STI working groups and committees.** (2.1)
   ***4.4. Establish user groups.** (3.3)
   ***4.5. Exhibit at expositions, meetings, conferences.** (2.3)
   *4.6. Coordinate and monitor promotional activities.

The Plan covers mid-FY1992 through FY1996. The Plan is to be reviewed at regular intervals to evaluate the activities to date and their success versus anticipated results. This includes incorporating new findings and "lessons learned" as well as making certain that the Plan remains in accord with the STI Program's strategic direction.

I. INTRODUCTION

A. Background

The purpose of the NASA Scientific and Technical Information (STI) Program User Services Plan is to provide guidelines for User Services staff on what activities should be undertaken to promote the STI Program and to identify resources and priorities to achieve User Services goals and objectives. A majority of the activities recommended in support of goals and objectives are already underway. This Plan is an attempt to structure those activities, develop new activities, and recommend priorities in a period of limited resources. It represents efforts of the User Services team to establish a clear vision and focus for current and future outreach efforts.

Committee members were Kay Voglewede (Chief of User Services), Wanda Colquitt (CASI), Tom Hermann (STI Program Office), Karen Holloway (STI Program Office), Lucinda Leonard (STI Program Office), Debbie Stubberfield (CASI), Teresa Taylor (STI Program Office), and Geoff Worton (TIS). Support from other STI Program staff was also provided, particularly in the area of verifying statistical data and producing a comprehensive list of products and services.

B. Scope of User Services Plan

The STI Program is composed of several components that together form a network of professionals who facilitate access to worldwide scientific and technical information. The components of the STI Program are the STI Program Office, the Center for AeroSpace Information (CASI), the Technical Information Service (TIS) of the American Institute of Aeronautics and Astronautics (AIAA), NASA Center STI offices, and international exchange partners such as the European Space Agency (ESA). *This Plan encompasses those activities that are within the mandate of the STI Program and that focus primarily on the NASA STI community.*

The STI Program User Services function includes STI user requirements, user awareness, user support, NASA Program Office support, NASA Center STI coordination, and product evaluation. *This User Services Plan addresses all of these segments.*

The STI Program provides information services to NASA administrators and managers, NASA science and engineering (S&E) staff, NASA contractors, information intermediaries, federal agencies and contractors, U.S. industrial and academic personnel, and the international aerospace community. *This Plan focuses on user services to the NASA community, however all user groups will potentially benefit from the proposed activities.*

The Plan covers mid-FY1992 through FY1996, approximately five years. The Plan is to be reviewed at regular intervals to evaluate the activities to date and their success versus anticipated results. This includes incorporating new findings and "lessons learned" as well as making certain that the Plan remains in accord with the STI Program's strategic direction.

C. STI Program Mission and Goals

The mission of the STI Program is to support the advancement of aerospace knowledge, contribute to U.S. competitiveness and international cooperation, and become an integral partner in NASA research and development (R&D) programs to support NASA goals.

The STI Program has developed eleven strategic goals in support of the Program's mission. Most of these goals encompass some aspect of User Services functions.

1. Establish the STI Program as an integral part of the NASA R&D effort.
2. Implement effective management strategies.
3. Improve current operations.
4. Accomplish rapid deployment of the NASA STI network.
5. Seek out and develop cooperative partnerships.
6. Enhance the quality of our products and services through a focus on the customer.
7. Build an attitude of quality throughout the enterprise.
8. Expand the existing participant community.
9. Expand international involvement.
10. Assert a NASA leadership role for STI policy.
11. Develop a program for Information Science R&D.

D. User Services Goals and Objectives

Two User Services goals have been developed within the parameters of the STI Program strategic goals:

GOAL 1
Ensure the delivery of quality products and services to meet the needs of the NASA STI Program user community.

GOAL 2
Increase visibility of and access to the NASA STI Program.

To give direction to these goals, four objectives have been formulated. They will contribute to meeting the desired results of delivering the right product at the right price at the right time to the right audience--a precept of Total Quality Management. Activities to achieve these objectives are presented in section IV, Activities and Priorities.

OBJECTIVE 1
Identify and recommend innovative products and services to meet users needs.

OBJECTIVE 2
Facilitate strategic alliances and cooperative programs to enhance and expand products and services.

OBJECTIVE 3
Anticipate requests for improved or new products and services.

OBJECTIVE 4
Promote the STI Program as an integral part of the NASA R&D community.

II. ORGANIZATION, PRODUCTS & SERVICES

A. STI Program Organization

The STI Program is composed of several operational components, illustrated in Figure 1. Those components having major User Services roles are the STI Program Office, the Center for AeroSpace Information (CASI), the Technical Information Service (TIS), and the NASA Center STI Operations.

A primary function of User Services is the dissemination of STI to end users. The dissemination network involves many levels and components including those mentioned above as well as other NASA organizations, other federal agencies, international exchange partners and the private sector. Figure 2 illustrates the STI flow in relation to the operational components.

B. User Services Responsibilities

The *STI Program Office User Services* staff have primary responsibility for determining the STI needs of NASA users and advising them on the availability of existing STI services and products. This is accomplished through interaction with Program Offices and Centers. The STI Program Office works with the User Services functions at CASI and TIS, providing direction when required and initiating projects that subsequently may involve both organizations. The STI Program Office also works with the Center libraries to provide outreach materials that direct Center staff to the appropriate information resource. Organizing exhibits at professional association meetings and conferences also rests with the STI Program Office.

The *Center for AeroSpace Information* is responsible for User Services to the NASA community, including NASA contractors. Other U.S. government agencies, federal government contractors, universities with government grants or aerospace curricula are also eligible to receive CASI products and services, if registered.

The *Technical Information Service* is responsible for User Services to aerospace industry (without current government contracts), universities, and other public or private organizations in the United States who are not eligible to register with CASI, although CASI registration does not exclude the registrant from using TIS resources.

Center STI Operations encompass publishing (editing and production), technical library services, graphics, printing, and multi-media (photography, video, optical). All functions provide various levels of services to Center personnel, including contractors. As intermediaries in the STI dissemination process, Center librarians facilitate the use of STI by their user community.

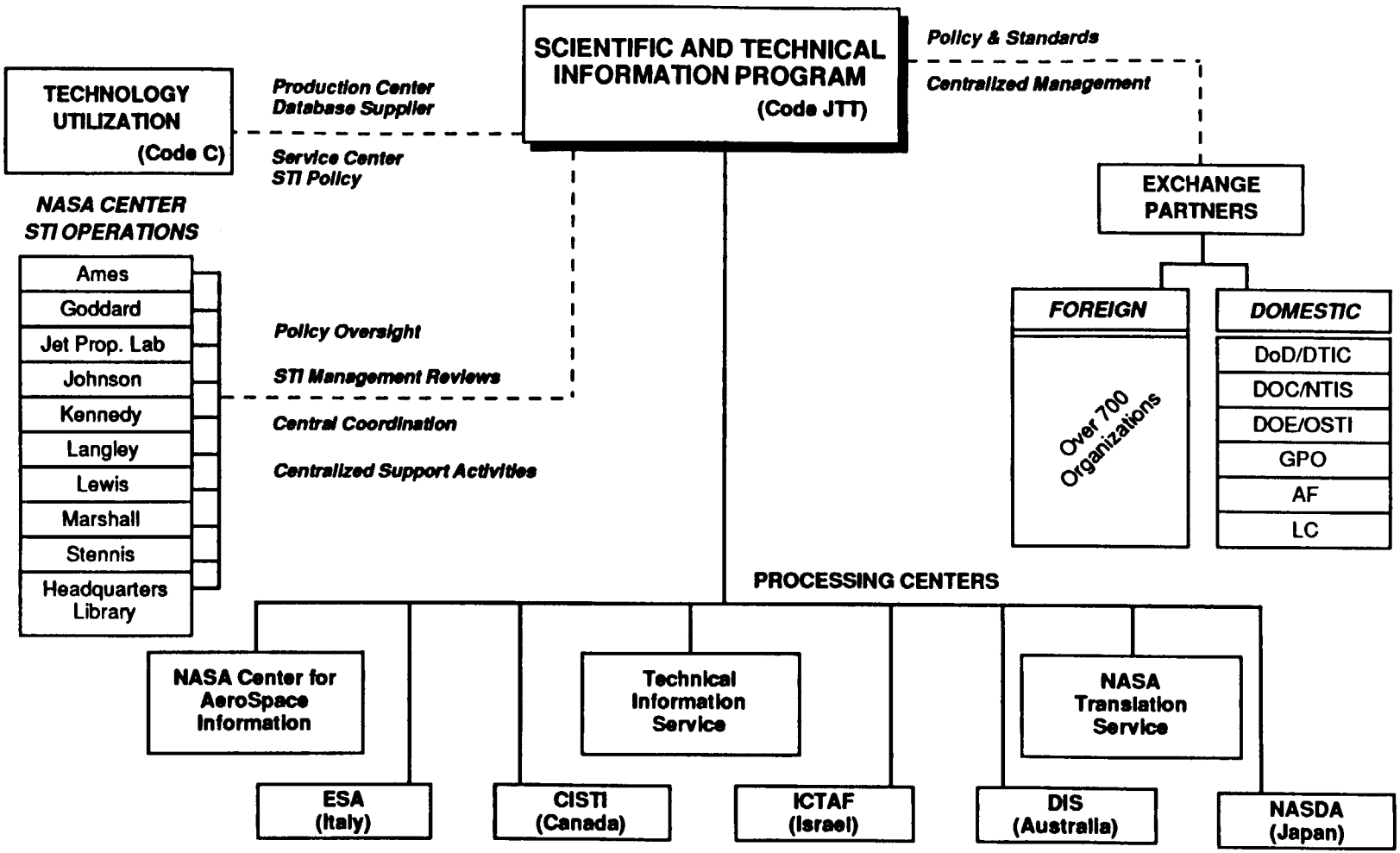

Figure 1. NASA STI Program Operational Components

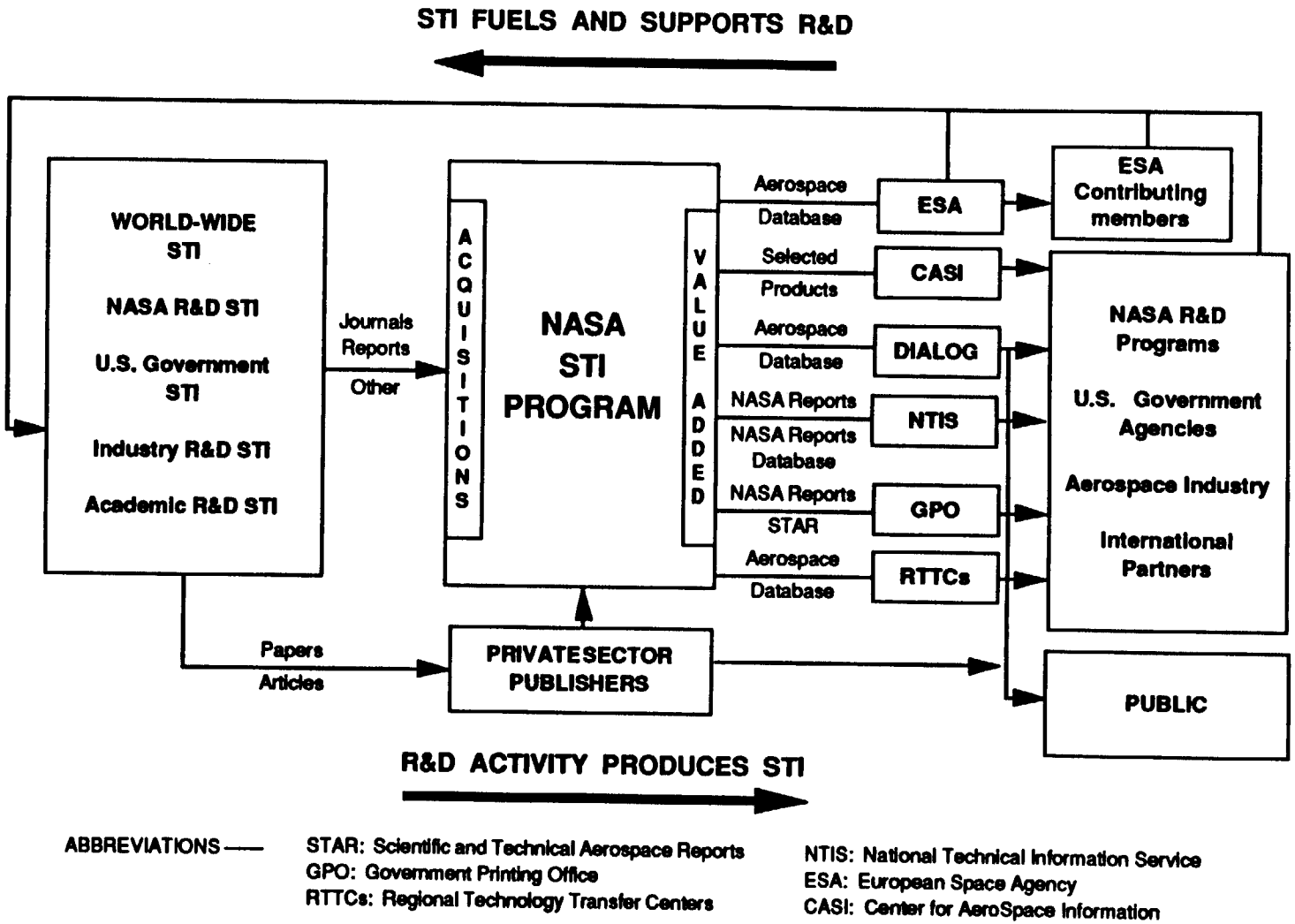

Figure 2. Flow of NASA Scientific & Technical Information

C. Description of Products and Services

Staff involved in promoting STI products and services need to be cognizant of the full range of products and services offered by the STI Program; a recently updated list is available in Appendix A. CASI and TIS provide the majority of products and services to various user groups. An evaluation process is going to be undertaken by CASI to determine whether to continue those products that have few recipients.

III. THE STI ENVIRONMENT

A. Audience Scope and Demographics

This section defines and segments current and potential user groups. Supporting statistical data for this section are in Appendix B. This information identifies for the User Services staff potential audiences that can be targeted for outreach activities. It is planned that the data will be kept current and made available in a database accessible to User Services staff.

NASA

At the end of FY1991 science and engineering (S&E) staff at NASA Centers and Headquarters numbered approximately 16,500 inclusive of JPL staff. Administrative staff numbered approximately 5,200. For the same period there were 668 RECON passwords made available to NASA components, all of which were not active, and 1,945 active CASI-registered NASA users, i.e., persons receiving documents but not necessarily registered for RECON access. There are numerous end-users who access RECON through the Center libraries, but these figures are not currently available.

The FY1991 distribution of S&E staff among the Centers and Headquarters range from a low of 111 at Stennis to a high at JPL of 3,298. The three highest Center R&D budgets are at Johnson, Goddard, and Marshall, however the more research-oriented Centers of Ames, Langley, and Lewis have R&D budgets that fall in the mid- to lower portions of this list. An effort will be made to differentiate the approach for S&E's at research centers and those at primarily operations centers (e.g., Johnson, Kennedy).

FY1991 NASA R&D Staff and Funding

Location	*Rank by R&D Funding*		*Rank by S&E Staff*	
Headquarters	4	$ 682.7m	9	549
Ames	7	$ 349.9m	8	1,198
Goddard	2	$1,153.0m	4	2,136
Jet Prop. Lab	5	$ 649.3m	1	3,298
Johnson	1	$1,161.7m	3	2,356
Kennedy	9	$ 210.3m	6	1,502
Langley	8	$ 279.4m	7	1,407
Lewis	6	$ 544.5m	5	1,539
Marshall	3	$ 966.1m	2	2,402
Stennis	10	$ 16.5m	10	111

NASA administrators and managers are also potential users of the STI Program. They number about 5,000 at all locations with Headquarters having 18% of the total. They are a key component in promoting the STI Program within their own organizations, so the approach by User Services to this group may differ from that taken for S&E staff. Also, a majority of the STI functions at NASA Centers and Headquarters are in the Administration portion of the budget. Although some monies may become available from R&D funds to support STI projects, it is probable that STI operations will continue to be funded through the Administration segment of the budget.

R&D funding by program office provides another approach to determining where STI Program efforts should be focused. The total NASA R&D budget increased 19% from FY1991 to FY1992. The three programs with the greatest increases from FY1991 to FY1992 are Space Exploration with a 330% increase in funding, Commercial Programs with a 70% increase, and Space Flight with a 46% increase. Statistics also show that NASA is giving considerable attention to global change issues. This activity resides primarily in the Earth Science and Applications Division, which is part of the Office of Space Science & Applications. The funding for this program increased 24% from FY1991 to FY1992.

NASA Contractors and Other Organizations

The top NASA contractors are listed in Appendix B. The list includes business firms, educational and non-profit organizations. Of the NASA contracts awarded in FY1990 and FY1991, business firms account for 80% of the total, educational institutions 4% and non-profit organizations 2%. Individual entries should be checked to determine which organizations are users of STI Program services through CASI and/or TIS and a program developed to reach those who are not. CASI reports that 154 RECON passwords for contractors were in existence in 1991 and TIS estimates it serves about 350 aerospace organizations in the U.S. through the Aerospace database. Although the total potential NASA contractor end-users is not known, the number of current contractor users of both CASI and TIS services is assumed to be a small portion of those qualified for these services.

Additionally, U.S. aerospace companies that are not NASA contractors should be identified, in particular those having a library or information center where an information professional can be the first point of contact for the STI Program. For educational institutions, the same approach can be taken with a focus on universities that have aerospace-related departments or programs. This number is thought to be about 80.

U.S. Government Agencies

There are several roles in which U.S. government agencies serve to promote the use and dissemination of NASA STI:

1. Consumers of NASA STI in support of S&E staff
2. Intermediary providers of NASA STI output for other government agencies and the public
3. Suppliers of data for the RECON database

In the first category, registered RECON users include the Department of Commerce, Department of Energy, and various branches of the Department of Defense. Other U.S. government agencies use NASA STI data through avenues available to the public, e.g., Government Printing Office (GPO), National Technical Information Services (NTIS), the Aerospace Database through Dialog Information Services. In the second category, NTIS and GPO are authorized to provide public access to NASA reports and publications. The GPO also makes most NASA unclassified, unrestricted reports available through their Federal Depository Libraries. The third category, suppliers of data for the RECON database, includes the Department of Energy, DTIC, and NTIS.

In addition to the relationships with the STI Program described above, many U.S. government agencies have an aerospace component in their missions. Funding levels for these activities are in Appendix B; agencies with an asterisk (*) do not have line item funding for space related activities.

Dept. of Agriculture	Conducts applications research on space-based systems for monitoring, assessing and managing agricultural and forest resources, and impact analysis on droughts and floods.
Dept. of Commerce	Oversees both polar-orbiting and geostationary operational weather satellites; administers the land remote-sensing program; and helps develop telecommunications policy for the use of geostationary orbits.
Dept. of Defense	Develops the National Launch System heavy lift booster jointly with NASA; researches and develops the Strategic Defense Initiative (SDI); and operates the Defense Satellite Communications System (DSCS) and the Defense Meteorological Satellite Program (DMSP).
Dept. of Energy	Develops nuclear electric power reactors for U.S. earth-orbiting and interplanetary spacecraft, and provides instrumentation for space-based monitoring of nuclear weapons test ban.

Dept. of Interior	Maintains remote-sensing resource data archive; uses remote-sensing data to inventory, monitor and manage national resources; assists various countries in remote sensing and geographic information systems; and has helped develop interplanetary spacecraft sensors and produced maps of planets and satellites.
Dept. of State*	Advises the President on international space matters; responsible for evaluating and advancing U.S. foreign policy interests in the context of space activity and represents the U.S. in international negotiations concerning space issues.
Dept. of Transportation	Through the Office of Commercial Space Transportation, oversees and coordinates the U.S. commercial space transportation industry by issuing launch license, establishing insurance requirements and research policy issues. Also, the Federal Aviation Administration is part of this Department.
Arms Control and Disarmament Agency*	Represents the U.S. in arms control negotiations, including those of space weapons systems.
Environmental Protection Agency*	Conducts research and technical support using satellite remote sensing as part of an overall environmental monitoring program.
National Science Foundation*	Supports academic research in atmospheric sciences and ground-based astronomy.
Smithsonian Institution*	Conducts basic research and public education on astronomy and space related topics.
U.S. Information Agency*	Disseminates information about US achievements in space to other countries.

It is important that cooperative programs with these agencies be maintained and strengthened. This, in part, is accomplished through CENDI (Commerce, Energy, NASA, National Library of Medicine, Defense Information), an interagency organization formed to improve federal R&D productivity and R&D information management systems through information exchange. Members are from the Department of Commerce, National Technical Information Service; Department of Energy, Office of Scientific and Technical Information; NASA STI Program; Department of Health and Human Services, National Institutes of Health, National Library of Medicine; and Department of Defense, Defense Technical Information Center.

Foreign Organizations

The international NASA STI network requires NASA approval of foreign users. The number of registered institutions as of January 1992 was approximately 700. Again, the end-user population is not known, although the universe of staff at these institutions who could potentially make use of NASA STI is projected to be close to 40,000.

Where possible, national level agreements are put in place and the NASA counterpart organization is the coordinator of the exchange of aerospace information between NASA and that country. In addition, the European Space Agency (ESA) acts as a consolidator of European input to NASA from member countries. In the past User Services functions have been left to each country organization; however, the STI Program is beginning to take a more active role in this area.

B. Information Requirements

In 1991 the NASA STI Council directed the STI Program to conduct a User Survey. Results of the survey were presented to the Council in May, 1992. Rather than detailing the survey results in this section, it is recommended that they be consulted as segments of this Plan are implemented. However, several important findings are worth mentioning here.

Use of STI resources:

- based on an annual average, respondents use the following STI resources:
  people = 53 times/year
  published (or printed materials) = 59 times/year
  electronic sources = 39 times/year

STI products and services:

- respondents became aware of STI products and services primarily through the Center/Headquarters library, followed by information from co-workers; a significant number said they became aware through the survey

- areas suggested for improvement included 1) provide a guide, and 2) access from a personal computer; a significant number of responses fell into the "other" category and these should be reviewed for more ideas

- new products and services suggestions included 1) access from a personal computer, and 2) develop activities to increase awareness

RECON usage:

- most respondents use RECON at the library with a librarian, however the next largest category of respondents said they do not use RECON

- those who do not use RECON stated 1) they did not know about it, and 2) they have no need to use it

NASA subscription publications:

- contribute primarily to current awareness, followed by provision of references

- respondents do not use because they do not need them or are not aware of them

- suggestions to improve were 1) to automate, and 2) to increase coverage

As results of the User Survey are further analyzed, those responsible for implementing the User Services Plan should look to this as a source for directing and defining activities.

C. Other STI Providers

To assist in determining where the STI Program ranks as a provider of STI to NASA and non-NASA users, a baseline of competitive databases has been compiled. Table 1 provides a list of those identified to date; a description of each database is in Appendix C. The two primary areas of competition are bibliographic files (online, CD-ROM, print products) and document delivery. Several of the "competitors" are also partners in distributing the STI Program data files as well as providing document delivery, e.g., National Technical Information Service (NTIS). They can be viewed as competitive in the sense that they offering NASA products and therefore impacting the customer base of the NASA STI Program.

To understand the different areas of competition, four levels of bibliographic data providers have been defined:

1. Those who provide primary subject coverage in aeronautics and may provide delivery of referenced documents; no agreements with the STI Program are in place.
2. Those who have agreements with the STI Program to provide public access to NASA-sponsored publications.
3. Those who deliver databases in disciplines related to aeronautics with coverage beyond the scope of the NASA STI databases.
4. Those who deliver databases with broad STI coverage, inclusive of aerospace-related disciplines.

Many database originators and other organizations deliver to end-users documents that are also available through CASI or TIS. In this activity they may be considered competitors; however, as in the case of bibliographic databases, there are STI Program agreements with several organizations to provide this service. A complete list of independent document delivery services would be impractical to compile, therefore only those that have document delivery agreements with STI Program are listed below:

- National Technical Information Service
- U.S. Government Printing Office
- NASA Regional Technology Transfer Centers
- European Space Agency

Identifying competitive products and describing product differences are only part of the process in understanding where the NASA STI Program ranks among database providers and determining what actions can be taken to improve and increase the use of its resources. Knowing to what extent STI Program core clients make use of resources external to the Program to supplement or displace NASA STI databases is an important factor. Informal discussions with several NASA Center Chief Librarians indicate extensive use of databases, both online and CD-ROM, that fall into the Level 3 category, i.e., databases whose depth of coverage in complementary disciplines is greater than that of the NASA STI databases. This issue is also being addressed, in part, by a Scope and Coverage analysis of RECON databases, currently underway by the STI Program. Recommendations could encompass changes in material selection criteria and/or provision of complementary databases through a NASA gateway.

Table 1. SELECTED AEROSPACE-RELATED BIBLIOGRAPHIC DATABASES

	Level 1*	Level 2*	Level 3*	Level 4*
Aero	♦			
Applied Science and Technology Index				♦
Biotechnology Abstracts			♦	
CEDOCAR				♦
Ceramic Abstracts			♦	
Chemical Engineering & Biotech. Abstracts			♦	
Claims/U.S. Patents				♦
Compendex				♦
Computer Database			♦	
Conference Papers Index				♦
Current Biotechnology Abstracts			♦	
Current Technology Index				♦
EMBASE (Excerpta Medica)			♦	
Energy Science and Technology			♦	
Engineered Materials Abstracts			♦	
Enviroline			♦	
European Aerospace Database		♦		
Federal Research in Progress				♦
FLUIDEX			♦	
Forschungsberichte Bundesrepublik Deutschland				♦
General Science Index				♦
GeoRef			♦	
GPO Monthly Catalog		♦		
HeatFlo			♦	
INSPEC			♦	
ISMEC			♦	
ISTP Search				♦
Japan Technology				♦
JapInfo				♦
Life Sciences Collection			♦	

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* LEVELS

1. Primary subject coverage is aeronautics and may provide delivery of referenced documents; no agreements with the STI Program.
2. Provides public access to NASA-sponsored publications; agreements with the STI Program.
3. Database in discipline(s) related to aeronautics with coverage beyond the scope of the NASA STI databases.
4. Database with broad STI coverage, including aerospace-related disciplines.

Table 1. SELECTED AEROSPACE-RELATED BIBLIOGRAPHIC DATABASES

	Level 1*	Level 2*	Level 3*	Level 4*
Management Contents			♦	
MathSci			♦	
Medline			♦	
METADEX			♦	
Microcomputer Index			♦	
NTIS		♦		
PASCAL				♦
PTS Aerospace/Defense Markets and Technology				♦
SAE Global Mobility Database	♦			
Scisearch				♦
SIGLE				♦
Soviet Science and Technology				♦
Space Patents	♦			
SPIN (Searchable Physics Information Notices)			♦	
SUPERTECH				♦
Technical Reports Database (DTIC)		♦		
Tribology Index			♦	
VINITI				♦
World Translations Index				♦

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* LEVELS

1. Primary subject coverage is aeronautics and may provide delivery of referenced documents; no agreements with the STI Program.
2. Provides public access to NASA-sponsored publications; agreements with the STI Program.
3. Database in discipline(s) related to aeronautics with coverage beyond the scope of the NASA STI databases.
4. Database with broad STI coverage, including aerospace-related disciplines.

IV. ACTIVITIES AND PRIORITIES

To achieve the goals and objectives of the User Services Plan, activities have been identified to accomplish each objective. Table 2 shows the relationship of the activities to STI Program strategic goals. Many of the activities are already underway (indicated in the STATUS field), but at various levels of effort. A number of activities are applicable to more than one objective, and although they have been repeated under each objective, the supporting text appears only the first time an activity is listed. Under each objective, *activities are listed in priority order.*

1. Identify and recommend innovative products and services to meet users' needs.

1.1. Define users and assess their STI requirements.

In April 1991 the STI Council directed the STI Program to define the NASA STI user community, determine users' requirements of the STI Program, and identify improvements for STI products and services. To accomplish these tasks, a survey instrument was developed in conjunction with Center STI Managers (Phase I); STI Managers conducted in-depth interviews with 550 NASA employees and contractors (Phase II); a self-administered survey was distributed to random samples at all Centers (Phase III); and interviews and responses were entered into the database for ongoing analysis and continuing update (Phase IV). A presentation of the preliminary findings was given to the STI Council in May, 1992.
STATUS: Phases are completed and analysis continues.

1.2. Build directory of NASA STI products, services, resources and capabilities.

To develop effective outreach activities, we need a better understanding of what the STI Program currently offers. The beginnings of a Products and Services list appears in Appendix A. It was also determined that a directory of STI resources and capabilities is desirable, in part, to discover what expertise exists "in-house", inclusive of Center STI Offices, that can be offered to the NASA community. One example is Langley's project to develop CD-ROM technology to record project papers, notes, correspondence, etc. that typically have been submitted for archiving in their original paper formats. Such a directory would also be useful among STI Program staff to locate a person who could assist in areas that may not fall within the requestor's expertise, e.g., a staff member experienced in hypertext applications. Two levels or versions of a directory might be preferable--one for internal use (more detailed with a person's name and phone) and one for external referrals (expanding on current capabilities list as other areas of expertise are identified).

STATUS: Several lists of products and services have been produced during the last year and a consolidated list appears in Appendix A, however it needs to be refined to clarify differences between products, services, and operations. Information management capabilities that are currently offered by the STI Program are listed in broad categories in promotional brochures (database creation, current awareness services, library management support, specialized indexing, etc.).

1.3. Expand communications to and from users.

Some activities that have recently been undertaken or proposed include receipt of monthly STI Program evaluations from the Centers, a refocus of the STI Bulletin, changing the RECON help desk to a centralized access point for all CASI user support activities, and organizing a Users Group. A vital component of many of these activities is Center STI staff whose interaction with the STI Program is coordinated by the STI Program Center Liaison.
STATUS: Some expansion is underway; an organized approach to identify and implement other avenues of communication is recommended.

1.4. Develop equitable pricing plans for products and services.

To serve the NASA community as a priority customer and provide a financial basis from which improved products and services can be developed for all user segments, equitable price structures for different categories of users are desirable. User Services staff can contribute to this process, for example, by understanding the market forces, planning announcements of changes, and monitoring government regulations and policies relating to pricing.
STATUS: Pricing structures are being revised.

1.5. Establish house standards for products and promotional materials.

A consistent appearance of STI Program publications and promotional materials aids in promoting the Program and giving the Program a unique identity. House standards also make it easier for those involved in creating materials to produce high quality publications. One accomplishment in this area has been the design of a logo to use on Program products.
STATUS: A committee has been formed to recommend design standards for promotional materials.

1.6. Establish an internal New Product development and testing function.

To integrate and coordinate the concept, testing, and introduction of new information products and services, a New Product function within User Services should be established. A coordinator would assign each new product or service to a Project Manager with responsibility for product development and ultimate success. All components of the STI Program would be encouraged to submit new product ideas to the Coordinator, as well as culling ideas from the user community. Each idea would be evaluated, compared against existing products, validated against user needs and given a priority rating. High priority products should have preliminary budgets and schedules drafted to determine their overall scope and potential impact on the STI Program.
STATUS: This function does not currently exist within User Services.

1.7. Identify and evaluate external information resources.

There is value in keeping abreast of external information resources related to NASA STI, as potential cooperative alliances and as direct competition.
STATUS: A list and description of bibliographic databases that complement or compete with the NASA STI database are found in Table 1 and Appendix C.

1.8. Identify new technologies relevant to STI.

Although this activity is not primarily a User Services function, User Services staff should be encouraged to contribute to the gathering and evaluation of new technology, especially applications identified as potentially having a positive impact on user communication and delivery of products and services.
STATUS: A NASA-wide Technology Focus Group has been established to perform this function and the Manager of User Services is a member.

2. Facilitate strategic alliances and cooperative programs to enhance and expand products and services.

2.1. Identify and participate in information management policy and working groups/committees.

Coordination of this activity rests with the STI Program Director, and User Services staff participate in user-related groups. An effort could be undertaken by User Services to seek out and participate in more of these types of committee activities. A "Directory of Committees, Groups, and Councils" in which STI Program staff participate is maintained. Policies affecting information management (e.g., Office of Management and Budget Circular A-130) also need to be monitored as part of this process.
STATUS: The CENDI User Education Working Group is one user-service oriented group in which the STI Program currently participates; other groups are identified in the Directory noted above.

2.2. Foster STI Program staff participation in professional associations.

Promoting this activity would take the form of encouraging membership on committees and presentation of papers. User Services staff should be responsible for identifying appropriate associations and paper presentation opportunities. A consolidated list of STI Program staff members' current professional association memberships and committee activities should be maintained.
STATUS: Association activities are supported and there is an increase in the level of activities in this area.

2.3. Exhibit at expositions, meetings, conferences.

An exhibits program is underway that includes determining which conferences, meetings, and expositions provide access to targeted audiences. Current focuses are to refine the message to carry to each meeting, develop additional promotional materials, evaluate the effectiveness of exhibits after they take place, and coordinate exhibit schedules between the STI Program and TIS.
STATUS: In process.

2.4. Identify and evaluate external information sources.

See 1.5 above.

3. Anticipate requests for improved or new products and services.

3.1. Expand communication to and from users.

See 1.3 above.

3.2. Promote the use of communications technology.

More effective means of communicating with STI Program users can be accomplished by taking advantage of new communications technology (e.g., E-mail, bulletin boards, facsimile document delivery). User Services staff can contribute to this effort by identifying and promoting the use of these forms of communication.
STATUS: In process.

3.3. Establish user groups.

User groups are mechanisms that expedite communication between users and information providers and to assist management in setting priorities. To improve and expand NASA STI products, services and operations, input from a broad spectrum of users is needed.

STATUS: A Steering Committee is being formed to lay the groundwork and establish procedures for the formation of the Group.

3.4. Create a User Services database.

Statistical data related to User Services functions will provide a benchmark by which progress can be measured. The database will be used to consolidate, compile and analyze information on the Program's audience, their information use patterns and information needs. It can also serve as a depository for recording outreach opportunities (meetings, presentations, discussions, and actions that STI Program staff are to take). The database should be updated as information becomes available and reside in a centralized data file, accessible to those with a need-to-know.
STATUS: Appendix B is a compilation of statistical data gathered in support of this Plan. It is expected that the categories will expand and change as the database is used as a resource.

3.5. Review and expand user training.

CASI is reformatting user support documentation and reviewing the training sessions offered to RECON users.
STATUS: In process.

3.6. Establish internal New Product development and testing function.

See 1.4 above.

4. Promote the STI Program as an integral part of the NASA R&D community.

4.1. Develop an outreach plan for NASA Program Offices.

Efforts to further the awareness and support of the NASA Program Offices will result in an STI Program that more successfully fulfills its mission to support the NASA R&D communities' information needs. Activities may include appointing a liaison in each Program Office, developing unique services and products for specific Program Offices, creating customized current news services, or promoting the Program in publications that Program Office staff read.
STATUS: A draft Outreach Plan is being reviewed.

4.2. Identify key players in emerging NASA policy issues; track and provide input.

NASA-wide policy issues have high visibility within NASA, in the aerospace community, and among government agencies. To make certain the STI Program has opportunities to be involved, User Services staff should identify issues and key people and recommend methods for the STI Program staff to participate. A recent example is the Program's involvement in the Interagency Working Group on Data Management for Global Change (IWGDMGC) that is producing a master plan, followed by an implementation project. Participation in the IWGDMGC's Library Information Subgroup and direct contact with NASA's IWGDMGC representative have led to input on the potential role of the STI Program in global change information management.
STATUS: The Global Change issue is receiving primary attention by User Services.

4.3. Identify and participate in information management policy and working groups/committees.

See 2.1 above.

4.4. Establish user groups.

See 3.3 above.

4.5. Exhibit at expositions, meetings, conferences.

See 2.3 above.

4.6. Coordinate and monitor promotional activities.

One person responsible for the coordination of promotional activities will prevent overlap and duplication of efforts. This includes development of promotional materials and the responsibility to make sure STI Program staff are aware of materials.
STATUS: In process; promotional strategies can be codified as in Table 3 to help determine opportunities and priorities.

Table 2. USER SERVICES ACTIVITIES

Activity	STIP Strategic Goal	User Services Objective
Define the users and assess their STI requirements	4,8	1
Build directory of NASA STI products, services, resources and capabilities	4	1
Expand communications to and from users	6	1,3
Develop equitable pricing plan for products and services	4,6	1
Establish house standards for all STI products and promotional materials	2	1
Establish internal New Product development and testing function	6	1,3
Identify and evaluate external information resources	4,5	1,2
Identify new technologies relevant to STI	3,11	1
Identify and participate in information management policy and working groups/committees	5,10	2,4
Foster STI Program staff participation in professional association meetings	1	2
Exhibit at expositions, conferences, etc.	1	2,4
Promote the use of communications technology	6,8	3
Establish User Group(s)	6	3,4
Create a User Services database	2	3
Review and expand user training	4,5,8	3
Develop an outreach plan for NASA Program Offices	1	4
Identify key players in emerging NASA policy issues; track and provide input	10	4
Coordinate and monitor promotional activities	2	4

Table 3. **PROMOTIONAL OPPORTUNITIES**

	AUDIENCE				
	NASA Administrators	NASA S&E Staff	NASA Intermediaries	Federal S&E Staff	Aerospace Community
PRINT BASED MEDIA					
Program Fact Sheet	♦	♦	♦	♦	♦
Program Overview	♦				
Personal Letters	♦				
Program Brochures	♦	♦	♦	♦	♦
Registration Packets		♦	♦	♦	
Media Press Releases					♦
ELECTRONIC MEDIA					
On-line Training	♦	♦	♦	♦	
Bulletin Boards	♦	♦	♦	♦	♦
Electronic Mail	♦	♦	♦	♦	♦
PERSONAL CONTACTS					
Field Visits					♦
Executive Briefings	♦				
Attend Key Meetings	♦	♦	♦	♦	♦
On-Site Training		♦	♦	♦	♦
Exhibits	♦	♦	♦	♦	♦
NASA Center Visits	♦	♦	♦		
Help Lines		♦	♦	♦	♦

V. IMPLEMENTATION

A. Resources

Most of the recommended activities can be initiated (or are underway) with current staff; however, the implementation of activities scheduled to start in FY1993 or later may be determined by the availability of more staff and/or more staff hours dedicated to User Services. Table 4 shows the lead person for each activity. An attempt has not been made to estimate the percentage of each person's time for these tasks since this will vary depending on other responsibilities and projects. This summary should be monitored and updated as staff resources fluctuate.

In addition to allocation of staff resources, the costs associated with each activity should be budgeted at the start of each project. Most of the activities are people-oriented rather than product-oriented, i.e., staff time is the primary commodity. However, projecting and budgeting costs for exhibits, brochures, publications, videotapes, and other consumables in support of each project requiring these materials is essential.

B. Implementation

It is the nature of most of the User Services activities that, once started, they are on-going rather than having a fixed duration; therefore a more detailed time line was not developed for this Plan. However, a timetable should be developed for each activity as it is undertaken.

C. Evaluation of Outreach Efforts

Measuring the effectiveness of each activity, as well as the User Services Plan as a whole, is critical to moving outreach efforts forward. Quantitative measures of success should be developed for each activity by the Chief of User Services and the designated lead person. The evaluation process should be an ongoing management tool that provides a means for continuous monitoring, diagnosis and change.

Table 4. User Services Resources

	STI Staff	K. Voglewede	L. Burdick	W. Colquitt	P. Curran	T. Hermann	K. Holloway	J. Hunter	K. Kaye	J. McLane	L. Scanlan	R. Sepic	D. Stubberfield	A. Taber	T. Taylor	J. Tolzman	G. Worton
Define users and assess their STI requirements								L									
Build directory of NASA STI resources & capabilities													L				
Expand communication to & from users											L						
Develop equitable pricing plan for products & services							L										
Establish house standards for STI products and promotional materials						L											
Establish New Product development & testing function											L						
Identify and evaluate external information sources							L										
Identify new technologies relevant to STI									L								
Identify and participate in info. mgt. policy & working groups	ALL																
Foster STI Program staff participation in prof. meetings	ALL																
Exhibit at expositions, conferences, etc.						L											
Promote the use of communications technology			L														
Establish User Group(s)								L									
Create a User Services Database													L				
Review and expand user training				L													
Develop an outreach plan for NASA Program Offices							L										
Identify key players in emerging NASA policy issues							L										
Coordinate and monitor promotional activities						L											

APPENDICES

A. STI Program Products and Services

B. Statistics

C. Descriptions of Selected Aerospace-Related Bibliographic Databases

Appendix A

STI Program Products and Services

Appendix A

STI PROGRAM PRODUCTS AND SERVICES

PRINT PRODUCTS	Abbrev	Frequency	Source	Distrib. #	Descriptive Notes
Bibliographies					
Aeronautical Engineering	SP-7037	monthly	CASI	399	continuing bibliography
Aerospace Medicine & Biology	SP-7011	monthly	CASI	238	continuing bibliography
European Aerospace Science & Technology	AERO-L	irreg.	CASI	168	special bibliography
Japanese Aerospace Science & Technology	SCITEC-L	irreg.	CASI	170	special bibliography
LSSSSSE - Large Space Structures & Systems in the Space Station Era	SP-7085	semi-ann.	CASI	585	continuing bibliography
Management	SP-7500	annual	CASI	135	continuing bibliography
Soviet Aerospace Science & Technology	SOVIET-L	irreg.	CASI	159	special bibliography
Database By-Products					
Advance Notice of L/SCAN	CURRENTS	monthly	CASI	8	recent acquisitions on five topics of current interest; citations include refs. to unclassified limited and classified reports; distribution limited to NASA personnel
AGARD Quarterly Reports	AGQT	quarterly	CASI	117	listing of unclassified AGARD publications received by NASA and announced in STAR
International Aerospace Abstracts	IAA	semi-mo.	TIS		lists abstracts of the open literature on aerospace subjects available worldwide
NASA Open Volumes on Aerospace	NOVA	semi-mo.	CASI		equivalent to IAA for NASA only distribution
NASA Patent Abstracts Series	SP-7039	semi-ann.	CASI	120	continuing bibliography
NASA Scientific & Technical Publications Catalog	SP-7063	annual	CASI		list of NASA publications from four report series: SP, RP, CP, TP
Research & Technology Objectives & Plans - Summary	RTOP	annual	CASI	1352	compilation of the "Summary" portions of each of the RTOPs used for management review and control of research currently in progress throughout NASA
Scientific & Technical Aerospace Reports	STAR	semi-mo.	CASI	421	abstract/index journal of worldwide aerospace-related reports in 76 categories
Selected Current Aerospace Notices	SCAN	semi-mo.	CASI	196	newsletter-type publication compiled from STAR and IAA, but segmented into 191 topics
Database Reference					
Corporate Source Authority List Entries	CSAL	quarterly	CASI	37	listing of all corporate source entries in the STI Database
Corporate Source Update	CSUPD	weekly	CASI	5	weekly additions to Corporate Authority List
Corporate Source Authority List Entries - Cross Reference Manual	CSCR	annual	CASI	11	cross-reference from acronyms and aliases to corporate source entries
NASA Thesaurus, Combined File Posting Statistics	CFPS	semi-ann.	CASI	19	management report
NASA Thesaurus Hierarchical Update	THESUPD	semi-ann.	CASI	6	supplementary to the NASA Thesaurus
NASA Thesaurus Terms Added/Changes	THESADD	monthly	CASI	249	supplementary to the NASA Thesaurus
NASA Thesaurus		triennial	CASI		authorized subject terms by which documents in the NASA STI Database are indexed and retrieved
NASA Thesaurus Supplement	THESRS	semi-ann.	CASI	445	update to the most recent edition of the NASA Thesaurus
RECON Manual	RECONMAN		CASI	802	reference manual for RECON users

PRINT PRODUCTS	Abbrev	Frequency	Source	Distrib. #	Descriptive Notes
Indexes					
Aeronautical Engineering Annual Cumulative Index		annual	CASI		annual index to SP-7037
Aerospace Medicine & Biology Annual Cumulative Index		annual	CASI		annual index to SP-7011
AGARD Index to Publications	AGINX	trienn.	CASI	316	index to AGARD Quarterly Reports
Index to NASA News Releases and Speeches	NRSPI	annual	CASI	42	listing of news releases distributed by the Office of Public Affairs and a selected listing of speeches presented by HQ staff
International Aerospace Abstracts Cumulative Index		annual	TIS		index to International Aerospace Abstracts
NASA Patent Abstracts Series Cumulative Index	SP-7039I	semi-ann.	CASI	115	index to SP-7039
NOVA Annual Cumulative Index	NOVAI	annual	CASI	20	annual index to NOVA
STAR Annual Cumulative Index	STARI	annual	CASI	380	annual index to STAR
Information					
Aerospace Database Newsletter		quarterly	TIS	5300	describes changes to the Aerospace Database and other services of TIS
STI Bulletin	STIBUL	quarterly	CASI	5099	newsletter informing STI users about STI Program products, services, and other information
STI Personnel Directory	DIRSTI	annual	CASI	477	list of contacts and addresses for components of the STI Program, plus Regional Technology Transfer Centers
Internal Management Reports					
RPC/STI Alpha Update		quarterly	CASI		management report
RPC/STI Cumulative Update		weekly	CASI		management report
RPC/STI Foreign Alpha Update		quarterly	CASI		management report
RPC/STI Numeric Update		quarterly	CASI		management report
RPC/STI NASA/SCAN Distribution Numeric Update		semi-mo.	CASI		management report
Statistics on NASA Issued Documents					management report

PRINT PRODUCTS	Abbrev	Frequency	Source	Distrib. #	Descriptive Notes
Technical Reports					
NASA Conference Publication (low no.)	CP	irreg.	CASI		compilation of papers from NASA-sponsored conferences, symposia, workshops, lecture series, seminars and other professional meetings; on initial distribution
NASA Conference Publication (high no.)	CP-LOW	irreg.	CASI		see above description; limited distribution
NASA Contractor Report (low no.)	CR	irreg.	CASI		reports scientific and technical findings of NASA-sponsored work by contractors and grantees; on initial distribution
NASA Contractor Report (high no.)	CP	irreg.	CASI		see above description; limited distribution
NASA Educational Publication	EP	irreg.	CASI		publications are produced by the NASA Education Publications Office and distributed by CASI
NASA Reference Publication	RP	irreg.	CASI		compilation of scientific and technical data, including technical handbooks and manuals, critical tables, monographs, textbooks, state-of-the-art summaries
NASA Special Publications	SP	irreg.	CASI		series includes summaries of mission results, scientific photographic atlases, histories and chronologies, comprehensive program descriptions, continuing bibliographies
NASA Technical Memorandum (low no.)	TM	irreg.	CASI		record of scientific and technical findings that do not warrant or cannot be given broad dissemination because of preliminary nature of material, limited interest or security considerations; on initial distribution
NASA Technical Memorandum (high no.)	TM	irreg.	CASI		see above description; limited distribution
NASA Technical Paper	TP	irreg.	CASI		record of significant findings resulting from NASA scientific and technical programs; NASA counterpart to peer-reviewed journal articles
NASA Technical Translation (low no.)	TT	irreg.	CASI		English translations of scientific and technical reports
NASA Technical Translation (high no.)	TT	irreg.	CASI		see above description

MICROFICHE PRODUCTS	Abbrev	Frequency	Source	Distrib. #	Descriptive Notes
AIAA Conference Papers	MFA10		TIS		papers presented at AIAA-sponsored meetings; secondary distribution
Defense Research Intelligence Center (DRIC) publications	MF-UDRIC		CASI	4	selected publications received from DRIC; secondary distribution
Defense Technical Information Center (DTIC) publications			CASI		selected publications received from DTIC; secondary distribution
Dept. of Energy (OSTI) publications			CASI		selected publications received from DoE; secondary distribution
Foreign microfiche	MFG6		CASI	19	miscellaneous documents received from foreign partners; secondary distribution
Joint Publications Research Service JPRS/DOE Translations	MFH5		CASI	13	selected translations received from JPRS; secondary distribution
NASA News Releases	MFNR		CASI	5	copies of news releases issued by the Office of Public Affairs; secondary distribution
NASA Reports					reports selected for microfiche; initial production and distribution
NASA Tech Briefs			CASI		all issues are microfiched
National Technical Information Service (NTIS) publications			CASI		selected publications received from NTIS; secondary distribution
STAR	MFSTAR		CASI	15	microfiche edition of STAR; secondary distribution

ONLINE & TAPE PRODUCTS	Abbrev	Frequency	Source	Distrib. #	Descriptive Notes
Aerospace Database			TIS		online version of STAR and IAA, available through Dialog; CD-ROM and magnetic tape available from TIS
Managers Biweekly			CASI		selected bibliographic citations on management issues added to the STI Database; online
STI Database			CASI		online version of STAR and IAA, available through RECON; CD-ROM and magnetic tape available from CASI
Thesaurus			CASI		magnetic tape version of NASA Thesaurus

SERVICE-RELATED PRODUCTS	Abbrev	Frequency	Source	Distrib. #	Descriptive Notes
ADDS Automatic Document Distribution Services profile	SPGEN SPECSER	annual annual	CASI	104 10	management report; SPGEN - low numbered series; SPECSER - high numbered series; hard copy and microfiche
Congressional Indexes - House Appropriations Committee		irreg.	CASI		index produced by CASI staff of House Appropriations activities
COSMIC (Computer Software Management & Information Center) Catalog	COSMIC	annual	CASI		abstracts and indexes containing NASA computer programs available for use within the U.S.
Descriptive Notice - Published NASA Reports	NOTICE-2	irreg.	CASI	20	management report
Index to NASA Tech Briefs	SP-5021	annual	CASI	281	bibliography of abstracts and indexes
NASA Tech Briefs Information Packets		annual	CASI		collection of materials sent on request in response to references in NASA Tech Briefs
Secondary (on demand) Distribution Services profile		annual	CASI		management report; hard copy and microfiche
Spinoff, Technology Utilization Annual Report		annual	CASI		summary of technology available for transfer and its potential for public benefit
University Programs Report		annual	CASI		active fiscal year NASA University Program projects and statistics
UPDATES	UPDATE	monthly	CASI	597	on-demand searches; available free to principal investigators and technical monitors

NON-NASA STI PRODUCTS DISTRIBUTION	Abbrev	Frequency	Source	Distrib. #	Descriptive Notes
AGARD Bulletin	AGBUL		CASI	257	
AGARD Handbook	AGHBK		CASI	317	
AGARD Highlights	AGHLT		CASI	18	
AGARD Technical Programme	AGTECH		CASI	239	
British Defence Research Information Center	DRICHC-C		CASI	3	classified hard copy
British Defense Research Information Center	DRICHC-U		CASI	3	unclassified hard copy
European Space Agency documents	ESAHC		CASI	8	
NASA Tech Briefs	TB	monthly	CASI	281	

SERVICES

Acquisitions on request
AIAA Aerospace Database - online access (Dialog), CD-ROM, training, documentation, help desk
ARIN (Aerospace Research Information Network) - online access, training, MIS reports, Union List of Serials, Data conversion, help desk
CASI ACCESS (Help Desk)
Customized thesauri
Database creation and management
Document identification; ordering
Document storage
Foreign language translations
Foreign publications distribution
Inter-library loan to NASA
Library management support
Literature searches
NASA publications editing and production support
NASA/RECON - online access, training, documentation
Reference service
Reproductions
Special Indexes
Special orders
Special Studies and Reports (RPC/STI and RPC/TU)
STI Database - online access (RECON), training, documentation
Support for conferences and meetings

Appendix B

STATISTICS

A. GOVERNMENT & NASA STATISTICS

1. Gov. agencies space-related budgets (in millions)

	FY1990	FY1991 #
Dept. of Defense	$ 19,382.4	$ 20,443.0
NASA	$ 13,073.4	$ 14,647.0
Dept. of Commerce	$ 201.7	$ 210.5
Dept. of Energy	$ 78.6	$ 106.2
Dept. of Agriculture	$ 26.4	$ 27.4
Dept. of Interior	$ 19.0	$ 24.0
Dept. of Transportation	$ 3.5	$ 3.6
EPA	$ 1.0	$ 1.0

2. NASA totals

2.1. Staff (includes JPL Staff)

	FY 1990	FY 1991	FY 1992
Science & Engineering	16,795	16,539 #	17,045 #
Professional Admin.	5,244	5,223 #	5,382 #
Others (clerical, tech support)	8,307	7,254 #	7,476 #
TOTAL (full time, permanent Civil Service)	29,545	29,016	29,903

2.2. Budget Outlays (in millions)

	FY 1990	FY 1991	FY 1992
Research & Development	$ 5,094.3	$ 6,023.6	$ 6,850.8
Research and program management	$ 1,991.1	$ 2,211.6	$ 1,577.6
Other (construction, communic.)	$ 5,343.4	$ 5,632.8	$ 5,924.4
TOTAL	$12,428.8	$13,868.0	$14,352.8

2.3 R&D Funding by Program (in millions)

	FY 1990	FY 1991	FY 1992
Space Science & Applications	$ 1,964.7	$ 2,431.1	$ 2,934.6
Space Station	$ 1,723.7	$ 1,900.0	$ 2,028.9
Aeronautics & Space Technology	$ 763.7	$ 893.9	$ 1,085.0
Space Flight	$ 546.1	$ 602.5	$ 879.8
Commercial Programs	$ 55.8	$ 88.0	$ 150.0
Academic Programs	$ 37.0	$ 55.1	$ 64.6
Safety, Rel., Maint. & Quality	$ 22.3	$ 33.0	$ 33.6
Tracking & Data Systems	$ 19.1	$ 20.0	$ 22.0
Space Exploration	$ 0	$ 3.5*	$ 15.0*
TOTAL	$ 5,132.4	$ 6,023.6	$ 7,198.5

* formerly budgeted under Space Technology & Research

Estimate

3. NASA Centers

3.1. R&D Budgets (in millions)

	FY 1990	FY 1991	FY 1992
Headquarters	$ 465.6	$ 682.7	$ 819.8
Ames Research Center	$ 311.3	$ 349.9	$ 443.0
Goddard Space Flight Center	$ 915.3	$ 1,153.0	$ 1,127.3
Jet Propulsion Lab	$ 571.8	$ 649.3	$ 750.8
Johnson Space Flight Center	$ 1,014.2	$ 1,161.7	$ 1,353.8
Kennedy Research Center	$ 149.9	$ 210.3	$ 283.6
Langley Research Center	$ 258.6	$ 279.4	$ 344.6
Lewis Research Center	$ 483.2	$ 544.5	$ 656.3
Marshall Space Flight Center	$ 945.1	$ 966.1	$ 1,047.2
Stennis Space Center	$ 15.1	$ 16.5	$ 24.4
TOTAL	$ 5,130.1	$ 6,023.5	$ 6,850.8

3.2. NASA Center personnel (full time, permanent CS)

FY 1990	S&E	Prof.Admin	Other*	Total
Headquarters	571	970	455	1,996
Ames Research Ctr	1,183	345	677	2,205
Goddard Space Flight Ctr	2,136	786	951	3,873
Jet Propulsion Lab	3,664	878	1,378	5,920
Johnson Space Flight Ctr	2,360	611	644	3,615
Kennedy Space Ctr	1,468	406	592	2,466
Langley Research Ctr	1,434	304	1,223	2,961
Lewis Research Ctr	1,500	284	944	2,728
Marshall Space Flight Ctr	2,376	605	638	3,619
Stennis Space Ctr	103	55	34	192
TOTAL (FY 1990)	16,795	5,244	7,506	29,545

FY 1991	S&E#	Prof.Admn#	Other#*	Total
Headquarters	549	927	416	1,892
Ames Research Ctr	1,198	355	666	2,219
Goddard Space Flight Ctr	2,136	777	970	3,883
Jet Propulsion Lab	3,298	798	1,224	5,320
Johnson Space Flight Ctr	2,356	616	652	3,624
Kennedy Space Ctr	1,502	401	600	2,503
Langley Research Ctr	1,407	293	1,231	2,931
Lewis Research Ctr	1,539	280	980	2,799
Marshall Space Flight Ctr	2,402	619	619	3,640
Stennis Space Ctr	111	59	35	205
TOTAL (FY 1991)	16,498	5,125	7,393	29,016

Estimate

* Clerical, maintenance, other non-professional support staff.

4. NASA Contractors

4.1. Number and value of all contracts

	FY 1990		FY 1991	
	Number	Value ($million)	Number	Value ($million)
Research & Development	1,822	$ 3,885.3	2,247	$ 3,222.9
Aeronautics & Space Tech	825	$ 931.0	1,001	$ 1,005.3
Space Science & Applic.	364	$ 404.4	521	$ 413.2
Space Operations	102	$ 1,390.1	72	$ 353.3
Commercial Programs	28	$ 43.6	40	$ 95.5
Space Station	22	$ 401.3	27	$ 500.2
Other Space R&D	375	$ 316.4	398	$ 290.5
Other R&D	39	$ 20.5	47	$ 16.8
Services	1,393	$ 3,627.5	1,548	$ 3,883.7
Supplies & Equipment	1,865	$ 2,387.3	1,895	$ 3,098.0
TOTAL *	5,080	$ 9,900.1	5,690	$10,204.6

(* excludes procurements of $25,000 or less)

4.2. Contracts by geographic region (in millions)

	FY 1990	FY 1991
New England	$ 180	$ 190
Mideast	$ 1,379	$ 1,389
Southeast	$ 3,362	$ 3,839
Great Lakes	$ 323	$ 372
Plains	$ 42	$ 40
Southwest	$ 1,338	$ 1,332
Rocky Mountain	$ 747	$ 713
Far West	$ 3,222	$ 3,147
Outside U.S.	$ 63	$ 73

4.3. Contractors by type of organization

	FY 1990		FY 1991	
	Value ($ million)	Percent of total	Value ($ million)	Percent of total
Business firms	$10,071.5	80%	$10,417.3	79%
Educational	$ 513.6	4%	$ 592.0	4%
Non-profit	$ 200.6	2%	$ 244.0	2%
JPL	$ 1,106.8	9%	$ 1,139.6	9%
Gov. agencies	$ 610.4	5%	$ 693.4	5%
Outside U.S.	$ 62.3	*	$ 72.7	1%

(* less than 0.5%)

4.4. Ranking of top contractors

	FY 1990 Rank	FY 1991 Rank
BUSINESS FIRMS		
Rockwell Intl. Corp.	1	1
McDonnell Douglas Corp.	2	2
Lockheed Space Ops.	3	3
Martin Marietta Corp.	4	4
Thiokol Corp.	5	7
General Electric	6	9
Boeing Co.	7	5
Rockwell Space Ops.	8	8
Lockheed Missiles & Space	9	6
TRW Inc.	10	14
Lockheed Engr. & Science	11	10
USBI Booster Prod. Co.	12	13
EG&G Florida Inc.	13	11
Computer Sciences Corp.	14	12
Ford Aerospace	15	--
Boeing Computer Support Serv.	16	17
Bendix Field Engr. Corp.	17	16
United Technologies Corp.	18	18
IBM	19	22
Grumman Aerospace Corp.	20	19
Sverdrup Technology Inc.	21	20
Loral Aerospace Corp.	--	15

	FY 1990 Rank	FY 1991 Rank
EDUCATIONAL & NON-PROFIT		
Stanford Univ.	1	1
Assn. Univ. Research & Astron.	2	2
Smithsonian Inst.	3	3
Universities Space Research	4	4
Mitre Corp.	5	6
Massachusetts Inst. of Tech.	6	5
Univ. of Calif., Berkeley	7	9
Univ. of Arizona	8	-
Univ. of Maryland	9	7
New Mexico State Univ.	10	8
Univ. of Alabama	-	10

Sources:
(latest editions available as of May 1992)

Aeronautics & Space Report of the President, FY1990
NASA Annual Procurement Report, FY1991
NASA Budget, FY1993
NASA Pocket Statistics, FY 1990
STI Program Center Liaison

B. CENTER FOR AEROSPACE INFORMATION (CASI)

1. RECON

1.1. RECON registered users

	Dec. 1990	Dec. 1991
Hardwire	217	233
Dial-up	684	746
TOTAL	901	979

1.2. RECON commands issued by NASA Centers

1990

	Total Commands	% of Total	Select Command	Order Command	Other Commands*
Headquarters	126,349	8%	24,213	1,252	100,884
Ames	133,718	8%	21,837	943	110,938
Goddard	160,065	10%	23,472	1,097	135,496
Jet Propulsion Lab	123,358	8%	21,356	173	101,829
Johnson	200,101	12%	27,237	1,421	171,443
Kennedy	25,792	2%	3,801	131	21,860
Langley	341,853	21%	69,259	1,942	270,652
Lewis	284,968	17%	45,116	3,152	236,700
Marshall	220,604	13%	30,676	1,118	188,810
Stennis	22,811	1%	3,221	864	18,726
TOTAL	1,639,619		270,188	12,085	1,357,346

1991

	Total Commands	% of Total	Select Command	Order Command	Other Commands*
Headquarters	130,579	8%	25,281	1,171	104,127
Ames	149,853	10%	19,066	973	129,814
Goddard	131,600	8%	17,182	1,154	113,264
Jet Propulsion Lab	150,018	10%	23,458	131	126,429
Johnson	203,421	13%	26,869	797	175,755
Kennedy	24,452	1%	3,585	16	20,851
Langley	295,270	19%	54,520	1,502	239,248
Lewis	288,325	18%	44,085	3,120	241,120
Marshall	183,035	12%	26,410	1,119	155,506
Stennis	17,742	1%	2,785	721	14,236
TOTAL	1,574,295		243,181	10,704	1,330,110

* Expand, Print, Browse, Other

1.3. RECON commands by non-NASA high-volume users

NASA CONTRACTORS

1990	Total Commands	Select Command	Order Command	Other Commands*
TOTAL (80 active accounts)	1,089,775	179,871	3,730	906,174
Univ. of Southern Calif.	93,514	13,444	245	79,825
Rockwell Intl. Corp.	44,644	5,953	611	38,080
Hercules Aerospace	43,122	3,721	0	39,401
Ball Corp.	42,361	3,624	12	38,725
NASA Industrial Appl. Ctrs.	39,052	6,869	287	31,896

1991	Total Commands	Select Command	Order Command	Other Commands*
TOTAL (68 active accounts)	889,765	144,631	2,681	742,453
Univ. of Southern Calif.	98,149	12,516	252	85,381
Ball Aerospace	45,381	3,333	25	45,381
Rockwell Intl. Corp.	38,952	4,071	326	34,555
Univ. of Tennessee	29,589	3,012	0	26,577
Univ. of Dayton	27,422	2,870	0	24,552

* Expand, Print, Browse, Other

GOVERNMENT AGENCIES

1990	Total Commands	Select Command	Order Command	Other Commands*
TOTAL (23 active accounts)	68,050	10,127	266	57,657
USAF Wright Patterson AFB	27,398	4,250	79	23,069
USAF Arnold AF Station	18,088	2,629	34	15,425
Dept. of Commerce	7,452	1,749	115	5,588
Central Intelligence Agency	3,394	371	6	3,017
Dept. of Defense	2,140	215	0	1,925

1991	Total Commands	Select Command	Order Command	Other Commands*
TOTAL (20 active accounts)	67,111	9,137	106	57,868
USAF Arnold AF Station	21,397	2,651	16	18,730
USAF Wright Patterson AFB	14,893	2,350	44	12,499
USAF Kirtland AFB	6,343	440	0	5,903
Dept. of Commerce	6,321	1,249	0	5,072
USAF Tyndall AFB	4,606	522	6	4,078

* Expand, Print, Browse, Other

GOVERNMENT AGENCY CONTRACTORS

1990	Total Commands	Select Command	Order Command	Other Commands*
TOTAL (13 active accounts)	19,670	3,867	171	15,632
Rockwell Intl. Corp.	9,101	1,439	60	7,602
Sandia Natl. Labs.	6,837	1,353	0	5,484
General Electric Co.	1,521	192	12	1,317
Energy Science Labs. Inc.	1,490	141	0	1,349
Teledyne Ryan Aeronautical	1,438	259	58	1,121

1991	Total Commands	Select Command	Order Command	Other Commands*
TOTAL (14 active accounts)	19,813	3,277	73	16,463
Rockwell Intl. Corp.	9,132	1,388	53	7,691
Sandia Natl. Labs.	6,327	1,118	0	5,209
Science Applications Intl.	1,672	352	4	1,316
Teledyne Ryan Aeronautical	788	152	8	628
Westinghouse Electric	739	78	8	653

* Expand, Print, Browse, Other

OTHER DOMESTIC

1990	Total Commands	Select Command	Order Command	Other Commands*
TOTAL (74 active accounts)	120,594	13,392	549	106,653
Florida Atlantic Univ.	18,610	1,851	0	16,759
Research Triangle Inst.	14,198	1,008	5	13,185
Fairchild Space	11,949	1,295	24	10,630
Univ. of SW Louisiana	9,637	1,950	0	7,687
Rockwell Intl/NAAO	4,479	580	56	3,843

1991	Total Commands	Select Command	Order Command	Other Commands*
TOTAL (60 active accounts)	129,757	17,982	622	111,153
Industrial Applic. Ctr.+	27,879	4,252	136	23,491
Central IAC 4+	19,917	4,688	47	15,182
Research Triangle Inst.	10,961	638	2	10,321
Central IAC 2+	10,780	195	0	10,585
Southern Univ.	9,645	677	43	8,925

+ now called Regional Technology Transfer Centers
* Expand, Print, Browse, Other

2. MAIL LISTS

CASI mails approximately 30 registration packets per month; the response rate to this monthly mailing averages 25%. Response data are maintained on the CASI RPCS system, which can generate two types of mailing lists: the CASI User Mailing List (domestic and foreign registrants) and the CASI Domestic Market Mailing List (foreign registrants excluded). The following statistics are for the CASI User Mailing List.

	1990	1991
NASA Components	1,474	1,945
Government Agencies	484	532
Government Contractors	67	70
NASA Contractors	303	340
International Partners	224	222
Domestic Partners	25	26
Other Foreign	628	699
Other Domestic	2,945	3,173
TOTAL	6,650	7,007

3. DOCUMENT DISTRIBUTION

3.1. Primary (Automatic) Document Distribution to NASA Centers

1990	Titles		Copies	
	PAPER	FICHE	PAPER	FICHE
Ames	468	2,996	3,853	6,316
Goddard	468	2,998	4,785	6,745
Headquarters	458	2,996	6,378	3,799
Jet. Prop. Lab.	465	2,996	2,672	3,158
Johnson	465	2,998	2,235	3,160
Kennedy	462	2,996	1,127	3,158
Langley	462	2,996	9,639	3,191
Lewis	466	2,998	4,052	3,160
Marshall	465	2,998	3,209	6,320
Stennis	74	2,996	326	3,158
TOTAL	N/A	N/A	38,330	42,165

1991	Titles		Copies	
	PAPER	FICHE	PAPER	FICHE
Ames	484	3,277	4,811	7,026
Goddard	484	3,282	6,433	7,310
Headquarters	606	3,278	6,455	3,518
Jet Prop. Lab.	482	3,273	3,383	3,513
Johnson	482	3,277	2,524	3,517
Kennedy	450	3,273	1,133	3,513
Langley	482	2,910	10,203	3,100
Lewis	473	3,278	4,829	3,518
Marshall	483	3,282	3,638	7,036
Stennis	81	3,273	346	3,513
TOTAL	N/A	N/A	43,755	45,564

3.2. Primary (Automatic) Document Distribution to non-NASA

1990	Titles		Copies	
	PAPER	FICHE	PAPER	FICHE
Government agencies	20,002	2,776	36,520	84,603
Government contractors	271	3,011	2,167	10,132
NASA contractors	470	3,033	22,991	111,117
International partners	368	2,757	44,736	36,165
Domestic partners	419	0	8,146	0
Other foreign	362	2,443	7,555	2,846
Other domestic	466	2,855	62,559	119,603
TOTAL	N/A	N/A	184,674	444,466

1991	Titles		Copies	
	PAPER	FICHE	PAPER	FICHE
Government agencies	20,655	3,167	38,612	83,805
Government contractors	289	3,314	3,582	11,019
NASA contractors	484	3,464	30,079	118,441
International partners	400	3,021	52,731	37,442
Domestic partners	455	0	8,907	0
Other foreign	401	2,589	11,847	2,942
Other domestic	483	3,217	72,813	196,289
TOTAL	N/A	N/A	218,571	449,938

3.3 Secondary (On-Demand) Document Distribution to NASA Centers

1990	Titles		Copies	
	PAPER	FICHE	PAPER	FICHE
Ames	796	29	957	30
Goddard	907	1	1380	1
Headqtrs	1029	5	2433	5
JPL	127	59	154	63
Johnson	702	213	990	235
Kennedy	73	10	151	11
Langley	1563	3	2496	3
Lewis	2125	20	2740	38
Marshall	848	8	1048	9
Stennis	591	0	684	0
TOTAL	8761	348	13,033	395

1991	Titles		Copies	
	PAPER	FICHE	PAPER	FICHE
Ames	634	78	728	80
Goddard	846	1	1401	1
Headqtrs	1005	6	1841	6
JPL	86	54	132	54
Johnson	350	169	407	169
Kennedy	13	0	14	0
Langley	1148	3	1629	3
Lewis	1831	13	2193	15
Marshall	523	603	1293	608
Stennis	510	0	575	0
TOTAL	6946	927	10,213	936

3.4 Secondary (On-Demand) Document Distribution to non-NASA

1990	Titles		Copies	
	PAPER	FICHE	PAPER	FICHE
Govt Agencies	150	16	156	16
Govt Contractors	219	12	233	12
NASA Contractors	2552	162	2,913	172
Intl Partnèrs	535	81	819	86
Domestic Partners	431	422	513	470
Other Foreign	128	17	157	18
Other Domestic	930	28	1,160	32
TOTAL	N/A	N/A	5,951	806

1991	Titles		Copies	
	PAPER	FICHE	PAPER	FICHE
Govt Agencies	191	24	191	24
Govt Contractors	111	13	115	13
NASA Contractors	2272	233	2383	251
Intl Partners	621	86	640	91
Domestic Partners	469	516	606	565
Other Foreign	71	7	72	7
Other Domestic	581	21	614	21
TOTAL	N/A	N/A	4621	972

3.4.1. Non-NASA detail (Secondary document distribution)

1990	Copies
NASA contractors	
Hughes Aircraft Co.	723
Rockwell Intl.	359
General Motors/Allison	290
Government agencies	
Wright-Patterson AFB	31
Arnold AF Station	30
Naval Ship R&D Ctr.	18
Government agency contractors	
Teledyne Ryan Aeronautical	44
Rockwell Intl., NAAO	34
Rockwell Intl., SSED	33
Domestic partners	
NTIS	809
Dept. of Energy, OSTI (TN)	161
International partners	
ESA-IRS	200
ONERA (France)	174
Natl. Aerospace Lab (Neth.)	105
Other domestic	
NERAC Inc.	289
IAC, Indianapolis	176
Fluidyne Engineering	160
Other foreign	
India Space Research Org	127
Inst. de Pesquisas Esp (Brazil)	48

1991	Copies
NASA contractors	
Hughes Aircraft Co.	702
Univ of So. Calif/IAC	230
Draper Lab.	199
Government agencies	
DTIC	49
Naval Air Warfare Center	27
AF DMA Aerospace Ctr.	26
Government agency contractors	
Rockwell Intl./NAAO	18
Science Applications Inc.	16
General Electric Acft. Engines	12

Domestic partners	
NTIS	1,022
Dept. of Energy, OSTI (TN)	151
International partners	
ONERA (France)	281
Natl. Aerospace Lab (Neth.)	119
Deutscher Wetterdienst Bibliothek	102
Other domestic	
NERAC Inc.	178
IAC, Indianapolis	123
Central IAC/Rural Enterprises	73
Other foreign	
India Space Research Org	65
Inst. de Pesquisas Esp (Brazil)	13

C. TECHNICAL INFORMATION SERVICE (TIS)

1. AEROSPACE DATABASE

1.1. Access by Password (via Dialog)

Year	Password access*
1989	1,050
1990	1,100
1991	1,200

* per month average of domestic and foreign combined

1.2 User Types

1991	United States		Australia		Canada		Israel	
	No.	%	No.	%	No.	%	No.	%
Academia	156	13%	-	-	16	14%	-	-
Industry	852	71%	-	-	52	43%	-	33%
Government	192	16%	23	100%	52	43%	4	67%
TOTAL	1,200		23		120		4	

U.S. statistics are based on average number of users per month; foreign numbers are for the actual number of passwords issued.

1.3 Subject Orientation

1991	IAA	STAR	IAA & STAR
Aeronautics	9%	9%	9%
Astronautics	6%	6%	6%
Chemistry/Materials	13%	9%	10%
Engineering	22%	27%	25%
Geosciences	10%	12%	11%
Life Sciences	5%	2%	3%
Math/Computer Sci.	12%	7%	8%
Physics	13%	10%	11%
Social Sciences	3%	1%	2%
Space Sciences	7%	18%	14%

2. TIS SOURCE MATERIAL

1991	Titles	Percent
Journals	30,999	66%
Meeting papers	3,659	8%
Monographs	300	1%
Conference volumes	11,171	24%
Collected works	939	2%
TOTAL	47,068	

Appendix C

DESCRIPTIONS OF SELECTED AEROSPACE-RELATED BIBLIOGRAPHIC DATABASES

Aero - contains citations with abstracts to literature of interest to the aerospace industry; sources include books, journals, reports, proceedings, and patents.
HOST: CEDOCAR
PRODUCER: CEDOCAR

Applied Science and Technology Index - contains references to articles, book review, interviews, and new product reviews in 334 publications. Coverage includes aeronautics and space science, chemistry, computer science, mathematics, metallurgy, physics.
HOST: BRS/Orbit
PRODUCER: H.W. Wilson Co.
PRINT EQUIVALENT: Applied Science and Technology Index

Biotechnology Abstracts - covers all aspects of biotechnology including genetic engineering, biochemical engineering, and waste disposal.
HOST: BRS/Orbit, Dialog, CD-ROM
PRODUCER: Derwent Publications Ltd.
PRINT EQUIVALENT: Biotechnology Abstracts

CEDOCAR - contains citations to literature on a wide variety of topics of interest to the defense community; coverage includes aeronautics and aerodynamics, astronomy and astrophysics, atmospheric sciences, earth sciences, materials, mathematical sciences, missile technology, physics, propulsion, fuels, and space technology.
HOST: CEDOCAR
PRODUCER: CEDOCAR

Ceramic Abstracts - covers the scientific, commercial and engineering literature that pertains to ceramics and related materials. Patents are included, as well as coverage of the processing and manufacturing aspects of ceramics.
HOST: BRS/Orbit, Dialog, STN
PRODUCER: American Ceramic Society
PRINT EQUIVALENT: Ceramic Abstracts

Chemical Engineering and Biotechnology Abstracts - provides information on industrial practice and theoretical chemical engineering. Abstracts cover the processing of chemicals, including chemical reactions, mixing or separation, heating or cooling, or transport.
HOST: BRS/Orbit, Data-Star, Dialog, ESA-IRS, FIZ Technik, STN
PRODUCER: Jointly by Royal Society of Chemistry and DECHEMA (Deutsche Gesellschaft fuer Chemisches Apparatewesen, Chemische Technik und Biotechnologie)
PRINT EQUIVALENT: Chemical Engineering Abstracts

Claims/U.S. Patents - covers patents issued by the U.S. Patent and Trademark Office.
HOST: BRS/Orbit, Dialog, STN, CD-ROM
PRODUCER: IFI/Plenum Data Co.

Compendex - provides worldwide coverage of civil , energy, environmental, geological, and biological engineering; electrical, electronics and control engineering; chemical, mining, metals, and fuel engineering; mechanical, nuclear, and aerospace engineering; and computers, robotics, and industrial robots.
HOST: BRS/Orbit, CEDOCAR, CISTI, Data-Star, Dialog, STN, CD-ROM
PRODUCER: Engineering Information Inc.
PRINT EQUIVALENT: Engineering Index

Computer Database - contains abstracts of articles on computers, telecommunications, and electronics. Hardware, software, peripherals and services are included.
HOST: BRS/Orbit, Data-Star, Dialog, CD-ROM
PRODUCER: Information Access Co.

Conference Papers Index - contains records for more than 100,000 scientific and technical papers presented at over 1,000 major regional, national, and international meetings each year.
HOST: Dialog, ESA-IRS
PRODUCER: Cambridge Scientific Abstracts
PRINT EQUIVALENT: Conference Papers Index

Current Biotechnology Abstracts - provides scientific, technical, and commercial information in the field of biotechnology. Subject areas include technology related to areas such as pharmaceuticals, agriculture, chemistry, energy, and food.
HOST: CISTI, Data-Star, Dialog, ESA-IRS, CD-ROM
PRODUCER: Royal Society of Chemistry
PRINT EQUIVALENT: Current Biotechnology Abstracts

Current Technology Index - covers journals published in the United Kingdom on acoustic engineering, aircraft engineering, chemical engineering, packaging, and space science.
HOST: Dialog
PRODUCER: Bowker-Saur Ltd.

EMBASE - covers the entire field of human medicine and related disciplines with abstracts of articles from over 4,000 biomedical journals published worldwide.
HOST: BRS/Orbit, Data-Star, Dialog, JICST, CD-ROM
PRODUCER: Elsevier Science Publishers
PRINT EQUIVALENT: Excerpta Medica

Energy Science and Technology - covers the literature of nuclear, wind, fossil, geothermal, tidal, and solar energy, as well as related topics such as the environment, energy policy, and conservation.
HOST: Dialog, STN
PRODUCER: U.S. Dept. of Energy

Engineered Materials Abstracts - covers the world's published literature on the science of polymers, ceramics, and composite materials and the practices of materials science and engineering as they relate to these materials.
HOST: BRS/Orbit, Dialog, ESA-IRS, STN, CD-ROM
PRODUCER: Jointly by ASM International and Institute of Metals
PRINT EQUIVALENT: Engineered Materials Abstracts

Enviroline - covers the world's environmental information, including management, technology, planning, law, political science, economics, geology, biology, and chemistry as they relate to environmental issues.
HOST: BRS/Orbit, Data-Star, Dialog, CD-ROM
PRODUCER: R.R. Bowker
PRINT EQUIVALENT: Environment Abstracts; Environment Index

European Aerospace Database - contains citations to European grey literature on the aerospace industry; covers reports and publications from European Space Agency (ESA) programs, governments, industry, research institute, and universities within the ESA member nations.
HOST: ESA-IRS
PRODUCER: European Space Agency

Federal Research in Progress - provides references to information about ongoing federally funded research projects in the fields of physical sciences, engineering, and life sciences.
HOST: Dialog
PRODUCER: National Technical Information Service

FLUIDEX - contains citations to worldwide literature related to the behavior and applications of fluids in engineering.
HOST: Dialog, ESA-IRS
PRODUCER: Elsevier Science Publishers
PRINT EQUIVALENT: various fluid engineering indexes

Forschungsberichte Bundesrepublik Deutschland - contains citations to articles, books, and reports related to projects sponsored by the Federal Ministry for Research and Technology in Germany.
HOST: STN
PRODUCER: FIZ Karlsruhe

General Science Index - contains citations to articles in 107 periodicals in the general sciences; covers astronomy, atmospheric science, earth sciences, mathematics, physics.
HOST: BRS/Orbit
PRODUCER: H.W. Wilson Co.
PRINT EQUIVALENT: General Science Index

GeoRef - provides access to more than 4,500 international journals, books, conference papers, government publications, dissertations, theses, and maps concerned with all aspects of geology, geochemistry, geophysics, mineralogy, petrology, and seismology.
HOST: BRS/Orbit, CISTI, Dialog, CD-ROM
PRODUCER: American Geological Institute
PRINT EQUIVALENT: various geological indexes

GPO Monthly Catalog - contains citations to public documents published by the executive, judicial, and legislative branches of the U.S. federal government and sold by the Superintendent of Documents.
HOST: BRS/Orbit, Dialog, CD-ROM
PRODUCER: U.S. Government Printing Office
PRINT EQUIVALENT: Monthly Catalog of U.S. Government Publications

HeatFlo - contains citations to literature on the theoretical and applied aspects of thermal design, heat transfer, and fluid flow.
HOST: ESA-IRS
PRODUCER: Heat Transfer and Fluid Flow Service
PRINT EQUIVALENT: HTFS Digest; Fouling Prevention Research Digest

INSPEC - contains bibliographic references to literature in the fields of physics, electro-technology, computers, and information technology.
HOST: BRS/Orbit, CISTI, CEDOCAR, Data-Star, Dialog, ESA-IRS, CD-ROM
PRODUCER: Institute of Electrical Engineers
PRINT EQUIVALENT: Physics Abstracts; Electrical and Electronic Abstracts; Computer and Control Abstracts

ISMEC - indexes significant articles, books, reports and conference proceedings in all aspects of mechanical engineering, production engineering, and engineering management.
HOST: BRS/Orbit, Dialog, ESA-IRS
PRODUCER: Cambridge Scientific Abstracts
PRINT EQUIVALENT: ISMEC: Mechanical Engineering Abstracts

ISTP Search - contains citations to proceedings and books from all scientific and technical disciplines.
HOST: BRS/Orbit
PRODUCER: Institute for Scientific Information
PRINT EQUIVALENT: Index to Scientific and Technical Proceedings

Japan Technology - contains abstracts to Japanese scientific and technical literature, including chemistry, metals, materials, manufacturing, and computers.
HOST: BRS/Orbit, Dialog
PRODUCER: SCAN C2C, Inc.
PRINT EQUIVALENT: C2C Abstracts: Japan

JapInfo - contains citations to the scientific and technical grey literature published in Japan; covers aviation and space technology, chemistry, materials, engineering, information systems, robotics.
HOST: CEDOCAR, Data-Star
PRODUCER: Eurobrokers SARL

Life Sciences Collection - contains abstracts of information in the fields of animal behavior, biochemistry, ecology, immunology, microbiology, neuroscience, toxicology, and virology.
HOST: BRS/Orbit, Dialog, CD-ROM
PRODUCER: Cambridge Scientific Abstracts

Management Contents - provides indexes and abstracts of current articles on decision sciences, industrial relations, managerial economics, operations research, organization behavior, and public administration.
HOST: BRS/Orbit, Data-Star, Dialog
PRODUCER: Information Access Co.

MathSci - provides coverage of the world's mathematical research literature, with emphasis on original Russian journals and translation journals from Russian, Chinese, and other languages.
HOST: Dialog, ESA-IRS, CD-ROM
PRODUCER: Jointly by American Mathematical Society and Stanford University

Medline - provides indexing and abstracts to articles in the broad field of biomedicine
HOST: BRS/Orbit, Data-Star, Dialog, JICST, Mead Data, STN, CD-ROM
PRODUCER: National Library of Medicine
PRINT EQUIVALENT: Index Medicus

METADEX - provides abstracts of the international literature on the science and practice of metallurgy.
HOST: BRS/Orbit, CEDOCAR, CISTI, Data-Star, Dialog, ESA-IRS, STN, CD-ROM
PRODUCER: Jointly by ASM International and Institute of Metals
PRINT EQUIVALENT: various metallurgy indexes

Microcomputer Index - a subject and abstract guide to articles from journals containing articles about the microcomputer world, book reviews, software reviews, applications, and descriptions of new products.
HOST: Dialog
PRODUCER: Learned Information, Inc.
PRINT EQUIVALENT: Microcomputer Index

NACA Historical File - contains citations to the literature in the National Advisory Committee on Aeronautics (NACA) library. Covers early aviation and aerospace development from NACA, manufacturers, and government agencies.
HOST: RECON
PRODUCER: NASA STI Program

NASA - provides abstracts of key scientific and technical documents in aeronautics, astronautics, and space sciences.
HOST: RECON, Dialog (as Aerospace Database), ESA-IRS (as NASA)
PRODUCER: NASA STI Program
PRINT EQUIVALENT: International Aerospace Abstracts (IAA); Scientific and Technical Aerospace Reports (STAR)

NASA Tech Briefs - references to articles taken from NASA Tech Briefs, published by the NASA Technology Utilization Division; covers descriptions of new products and processes developed by NASA facilities and contractors.
HOST: RECON
PRODUCER: NASA STI Program
PRINT EQUIVALENT: NASA Tech Briefs

NTIS - describes research reports from NASA, Dept. of Energy, Dept. of Transportation, Dept. of Commerce, Dept. of Defense and some 240 other U.S. government agencies.
HOST: BRS/Orbit, CEDOCAR, CISTI, Data-Star, Dialog, JICST, STN, CD-ROM
PRODUCER: National Technical Information Service
PRINT EQUIVALENT: Government Report Announcements

PASCAL - a multi-disciplinary database equivalent to the 79 printed Pascal journals. Major subjects include life sciences, biology, medicine, chemistry, pollution, energy, metallurgy, mechanical and civil engineering, transportation, agricultural sciences, earth sciences, physics, space sciences, computer sciences, and engineering. The database is bilingual in French and English.
HOST: Dialog, ESA-IRS, Questel, CD-ROM
PRODUCER: Centre National de la Recherche Scientifique, Institut de l'Information Scientifique et Technique PRINT EQUIVALENT: various PASCAL indexes

PTS Aerospace/Defense Markets & Technology - contains citations with abstracts and selected full texts to the worldwide literature on the aerospace and defense industries. Covers companies, technologies, products, defense budgets, aerospace and airline products.
HOST: Data-Star, Dialog
PRODUCER: Predicasts

SAE Global Mobility Database - contains citations with abstracts to technical papers on aerospace and automotive technology that have been presented at Society of Automotive Engineers (SAE) meetings and conferences.
HOST: BRS/Orbit, ESA-IRS, FIZ Technik, diskette
PRODUCER: Society of Automotive Engineers

Scisearch - an index to the literature of science and technology as presented in over 2,600 major scientific and technical journals. A feature of the database is citation indexing which allows retrieval of newly published articles through the subject relationships established by an author's reference to prior articles.
HOST: BRS/Orbit, Data-Star, Dialog, CD-ROM
PRODUCER: Institute for Scientific Information
PRINT EQUIVALENT: Science Citation Index

SIGLE (System for Information on Grey Literature in Europe) - contains citations to the grey literature published in most European Community member countries; coverage includes aeronautics, chemistry, earth science, electronic, materials, mathematics, missile technology, physics, propulsion, and space technology.
HOST: STN
PRODUCER: European Association for Grey Literature Exploitation

Soviet Science and Technology - contains citations, most with abstracts, to the scientific and technical literature published in the former Soviet Union with a focus on technology applications; includes aerospace, aeronautics, computer technology, fuels, metallurgy, robotics.
HOST: Dialog
PRODUCER: IFI/Plenum Data Co.

Space Commercialization Database - contains citations to literature on microgravity science and its applications to space commercialization and manufacturing.
HOST: RECON
PRODUCER: Jointly by NASA STI Program and NASA Technology Utilization Division

Space Patents - contains citations with abstracts to patents in all areas of space technology.
HOST: ESA-IRS
PRODUCER: European Space Agency

SPIN (Searchable Physics Information Notices) - provides indexing and abstracts of all the journals published by the American Institute of Physics, as well as additional American physics journals.
HOST: Dialog
PRODUCER: American Institute of Physics
PRINT EQUIVALENT: Current Physics Index

SUPERTECH - contains abstracts of articles on biotechnology, artificial intelligence, computer-aided design and manufacturing (CAD/CAM), robotics, and telecommunications.
HOST: Dialog, BRS/Orbit
PRODUCER: R.R. Bowker

Technical Reports Database (DTIC) - contains citations to reports on the results of U.S. Department of Defense-sponsored scientific and technical research, development, test and evaluation projects.
HOST: DTIC
PRODUCER: DTIC

Tribology Index - contains citations to literature on tribology, the science of dealing with the design, friction, wear and lubrication of moving parts.
HOST: FIZ Technik, STN
PRODUCER: Bundesanstalt fuer Materialforschung und -pruefung
PRINT EQUIVALENT: Documentation Tribology

VINITI - contains abstracts of scientific and technical literature published in the former Soviet Union; major areas include electronics, robotics, computer technology, and information sciences.
HOST: ICSTI
PRODUCER: VINITI, All Union Institute for Scientific and Technical Information

World Translations Index - contains citations to translations of scientific and technical literature.
HOST: Dialog, ESA-IRS
PRODUCER: International Translations Centre
PRINT EQUIVALENT: World Translations Index

SOURCE Descriptions:

BRS/Orbit - two separate online services, both owned by Maxwell Communications, McLean, VA
CEDOCAR - Centre de Documentation de l'Armement, Paris, France
CISTI - National Research Council of Canada, Ottawa, Canada
Data-Star - Berne, Switzerland
Dialog - Dialog Information Services, Palo Alto, CA
DTIC - Defense Technical Information Center, Alexandria, VA
ESA-IRS - European Space Agency, Information Retrieval Service, Frascati, Italy
FIZ Technik - Frankfurt am Main, Germany
ICSTI - International Centre for Scientific and Technical Information, Moscow, Russia
JICST - Japan Information Center of Science and Technology, Tokyo, Japan
Questel - Paris, France
RECON - REsearch CONnection, NASA STI Program, Washington, DC
STN - STN International, Chemical Abstracts Service, Columbus, OH